

June 22, 1994

F/SWC2:RBM:JLB
CR9403-2.RBM

CRUISE REPORT

VESSEL: *Townsend Cromwell*, Cruise 94-03 (TC-189)

CRUISE PERIOD: May 5-31, 1994

AREA OF OPERATION: Northwestern Hawaiian Islands

TYPE OF OPERATION: Personnel from the Southwest Fisheries Center (SWFSC) Honolulu Laboratory (HL), National Marine Fisheries Service (NMFS), NOAA conducted trapping, shark tagging, and video camera drop operations in the waters of the Northwestern Hawaiian Islands. Supplies and personnel were delivered to the Tern Island field camp.

ITINERARY:

- 5 May - Start of cruise. On board were Daniel Brinkman, Mitchell Craig, Victoria de Bettencourt, Alan Everson, Wayne Haight, Steve Kirkland, Robert Moffitt, Frank Parrish, and Gordon Smith. Departed Snug Harbor at 1000 and proceeded to Tern Island, French Frigate Shoals.
- 7 May - Arrived at Tern Island. Disembarked Craig, de Bettencourt, and Kirkland. Off-loaded field camp supplies. Departed Tern Island; proceeded to Maro Reef.
- 8 May - Arrived at Maro Reef. Commenced lobster trapping, octopus trapping, and camera drop operations.
- 9-17 May - Continued trapping and camera drop operations.
- 18 May - Finished trapping operations. Departed Maro Reef; proceeded to Necker Island.
- 20 May - Arrived Necker Island. Commenced trapping and camera drop operations.
- 21-28 May - Continued trapping and camera drop operations.

- 29 May - Finished trapping operations. Departed Necker Island; proceeded to Snug Harbor, Oahu.
- 31 May - Arrived at Snug Harbor, Honolulu, Oahu. End of cruise.

MISSIONS AND RESULTS:

- A. Conduct lobster trapping operations at selected sites in the NWHI using plastic lobster traps.
1. Collected data on abundance and species composition of trap-captured lobster at two banks in the NWHI to compare with results of previous years.

A total of 142 lobster trapping stations were conducted using black plastic (Fathom's Plus) lobster traps with a 1 by 2-in mesh. Each station consisted of a single string of traps. Strings were composed of either 8 or 20 traps separated by 20 fm of ground line. Traps were baited with 1.5-2.0 lb of cut mackerel and soaked overnight. Traps were set within three depth ranges: 10-20, 20-35, and 50-80 fm. Legal sizes are defined by tail widths of 50 mm for spiny lobster and 56 mm for slipper lobster.

Catch rates of legal spiny lobster were low at Maro Reef, ≤ 0.25 lobster per trap-night at all depths and locations. Catch rates were generally higher in the shallower depth range. Catch rates of sublegal spiny lobster were also low, ≤ 0.30 , at all depths and areas except for the deeper depth in quad 2-6 where the catch rate was 0.76. Catch rates of legal slipper lobster were high at most of the sites at the shallower depths, 0.80-2.26 per trap-night (only 0.08 in quad 4-7). Legal slipper catch rates varied from 0.02-0.72 in the 20-35 fm sets and were 0.00 in all the 50-80 fm sets. Sublegal slipper catch rates varied from 0.10 (quad 4-7) to 1.69 at the shallower depths and were much less (0.00 to 0.49) at other depths. Spiny lobster catch rates from 1994 appear to be less those obtained in 1993 for legal and short lobster. Total slipper lobster catch rates appeared higher than 1993 rates, but legal rates were less. This is largely due to increased numbers of berried females in the catch, which may be an artifact of season (May 1994 vs. June 1993).

Catch rates of legal spiny lobster at Necker Island were very similar to those of 1993. They ranged from 0.14 per trap-night in quad 6-5 (0.02 in 1993) to 1.26 in quad 5-7 (0.99 in 1993). Total catch of spiny lobster (including sublegal), however, was lower than

1993 ranging from 0.21 to 5.61 in 1994 and 0.12 to 9.50 in 1993. Slipper lobster catches in 1994 were also lower than those of 1993 (0.06-0.86 vs 0.15-1.15). In general, catches at the shallowest depths were greater than those from the two deeper depth ranges.

2. Obtain length-frequency data on spiny and slipper lobsters to compare with those of previous years and to refine estimates of growth and mortality.

Carapace length and tail width measurements were recorded for approximately 3,100 spiny and 1,650 slipper lobster.

3. Conduct lobster trapping in shallow waters, on the barrier reef and inside Maro Reef lagoon.

A total of 7 stations were occupied in shallow water (1-13 fathoms) on the barrier reef and inside the Maro Reef lagoon. Eleven to fifteen traps were set singly at each station. Traps were baited with mackerel and soaked for one night. Lobster were counted, sexed, and measured from each trap. A total of 175 *Panulirus marginatus*, 25 *P. penicillatus*, and 25 *Scyllarides squammosus* were caught for overall catch rates of 1.82, 0.26, and 0.26 per trap-night, respectively. Many of the lobsters taken from a spur on the northwest portion of the barrier reef were sublegal, whereas most of the lobsters caught from the interior of the lagoon were quite large.

4. Conduct lobster trap escape vent studies.

A total of 22 stations were occupied at Necker Island to compare catches of vented and nonvented traps. Areas along the northern edge of the bank were chosen because sublegal and total catch rates were high there during normal trapping activities. Two depth ranges were selected, 10-20 fm and 20-35 fm. A total of 1,041 spiny and 231 slipper lobster were caught. Legal catch rates were nearly identical in vented and nonvented traps, but sublegal catch rates in nonvented traps were about twice those of vented traps.

B. Conduct octopus trapping operations.

1. A total of four octopus trapping stations were conducted, two at Maro Reef and two at Necker. At each bank one string of octopus pots was set at about 15 fm and a second at about 30 fm. Octopus pots were constructed of PVC pipe, diameters of 3, 4, or 5 inches, with a concrete plug at one end. Pots were

placed 10 fm apart on an anchored ground line and soaked for 10 days at Maro Reef (pots were not recovered at Necker Island). One small *Octopus cyanea* was caught in a 5-in diameter pot. Bad weather at Necker Island is blamed for loss of the gear, probably from chaffing of the line on the bottom due to high swells.

- C. Conduct camera drops to evaluate lobster habitat.
1. A total of 33 camera drop operations were conducted in the vicinity of trapping sites.
- D. Tag and observe sharks following the vessel during lobster trapping operations.
1. Sharks were chummed daily during lobster trapping operations. They were easily baited in close to the vessel and tagged with streamer tags when observed. Weather at Necker Island was poor, and no sharks were observed there. At Maro Reef we observed one shark that was tagged last year (June 1993). We did not recover that shark and do not know where on the bank it was tagged. As was observed last year, sharks do not appear to follow the vessel over distances of more than about 1 mi.

**SCIENTIFIC
PERSONNEL:**

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Submitted by:

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Attachment